SOUTH AFRICAN COMMERCIAL FISHERIES REVIEW ~ 1995

MARINE AND COASTAL MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL
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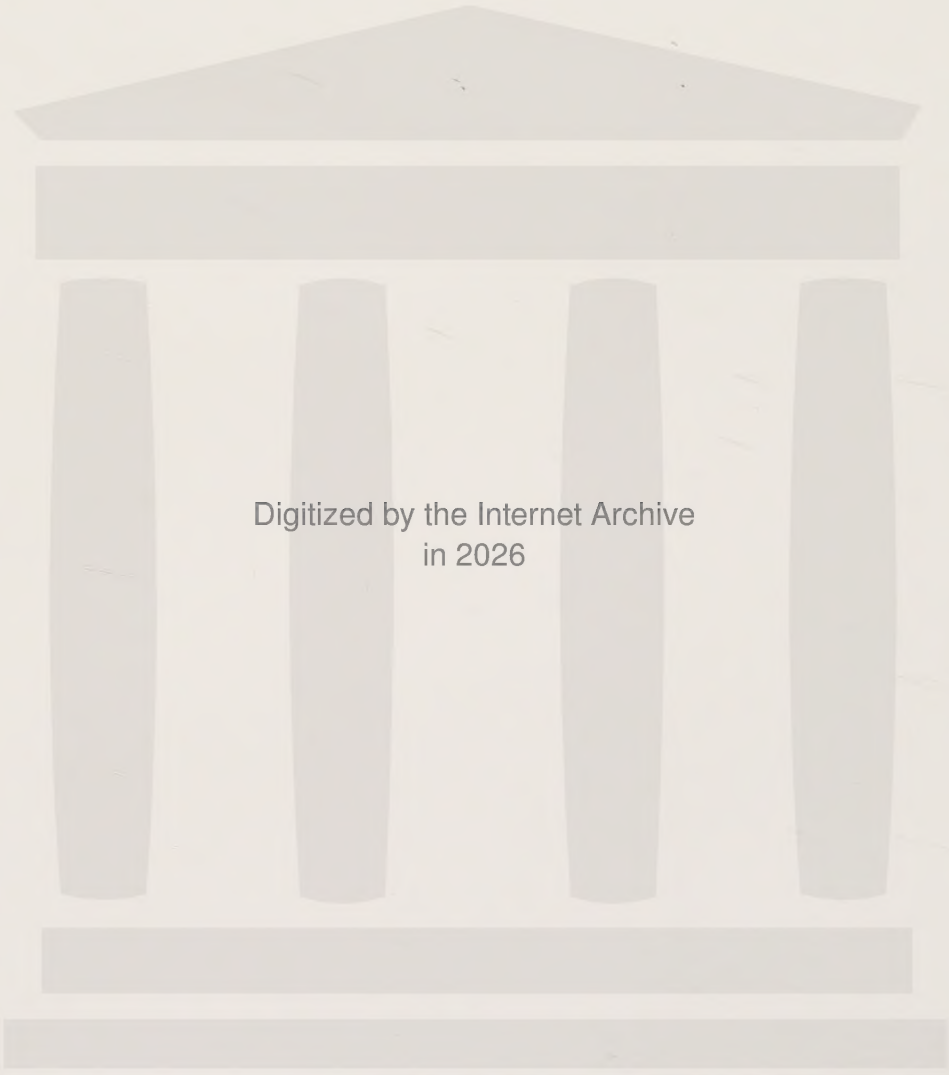
SOUTH AFRICA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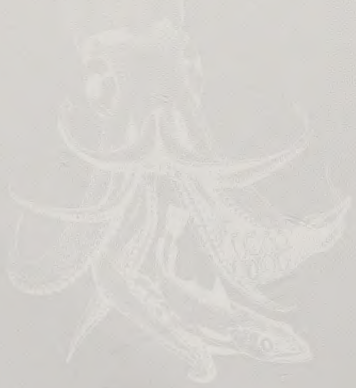

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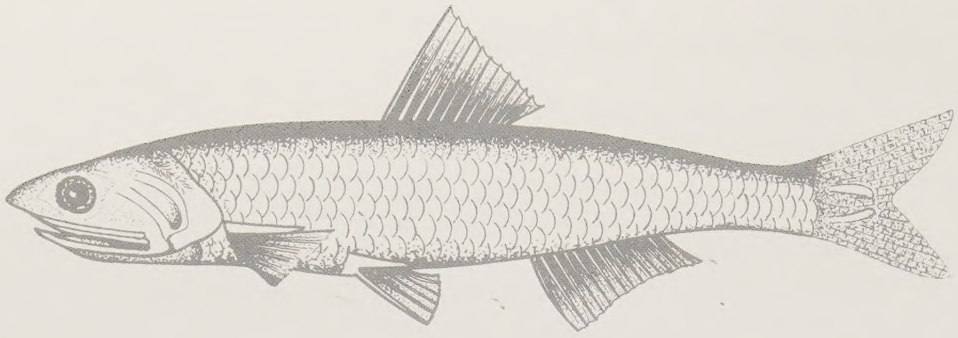
The text was compiled by the editor from contributions by the relevant directorates, subdirectorates and divisions of Marine and Coastal Management, based largely on statistics and information rendered by the fishing industry.



MISSION OF MARINE AND COASTAL MANAGEMENT

To provide for responsible custodianship of South Africa's marine and coastal resources and ecosystems for the benefit of current and future generations of South Africans. This is achieved by the conservation of such resources and ecosystems through the control of, and the orderly, fair and equitable access to, their optimum sustainable utilisation. Activities are undertaken in accordance with national and international norms, and are:

- carried out under the auspices of the Department of Environmental Affairs and Tourism in an open, cooperative and accountable manner, subject to Government policy, and
- based on rigorous, multidisciplinary research and monitoring aimed at developing a comprehensive understanding of relevant resources and ecosystems as well as of relevant industries and communities.

EDITORIAL NOTE

The South African Commercial Fisheries Review aims to present the official statistics on the catches, production and monitoring of the South African commercial marine fisheries sector. It also documents changes in legislation, exploited stocks, fishing practices, processing and marketing trends and in fisheries management. More detailed descriptions of the scientific research that is undertaken by Marine and Coastal Management is presented in Research Highlights, the companion series to this one.

Marine and Coastal Management (M&CM) is the new name for Sea Fisheries which was amalgamated with the subdirectorate: Coastal Management early in 1999.

1. INTRODUCTION

The year 1995 was a year of transition in the South African fishing industry. The process of drafting a fisheries policy for South Africa, which was set in motion in October 1994, continued throughout 1995, and in the absence of clear guidelines on fisheries management many decisions had to be deferred until the policy became available.

This situation led to industrial unrest and many disruptions in fishing activities, mainly in the demersal sector. This resulted in, among other things, the hake Total Allowable Catch not being filled.

Despite these problems 1995 was still a good year for the fishing industry. Total landings increased by 7,8% and the wholesale value by 21,8%. The main reason for this was the increase of respectively 18,7% and 39,5% in the value of the demersal and pelagic sectors.

The growing international recognition of South African hake as a high-quality and competitively priced white-fish species enabled companies to obtain a better price for their product.

This, together with increased local demand, more than compensated for the lower catches. Better catches and prices were also responsible for the improvement in the value of the pelagic industry.

In the demersal fishery there was a move towards breaking into the wetfish hake export market by producing a better quality trawled product and by upgrading quayside facilities in Mossel Bay to European Union specifications. More than 300 tons of head-on hake were exported to Europe in 1995.

The first phase of the hake-directed longline experiment was also successfully completed in June 1995. Modelling based on data collected suggested initially that longlining, as a fishing technique for hake, was biologically preferable to trawling.

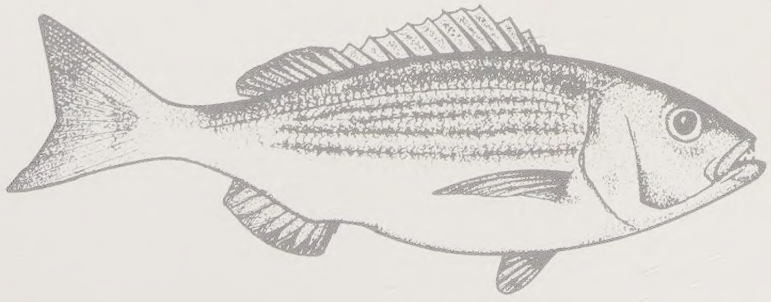
The second phase of the experiment will commence in January 1996 and will run until the end of 1997.

An interesting development in the abalone industry was the increasing trend towards the export of live abalone. These abalone are flown to the East in oxygen-filled polystyrene containers.

A small quantity of dried abalone was also exported. Abalone poaching poses a severe threat to the sustainability of future abalone harvests.

A study to determine the carrying capacity of Saldanha Bay for mussel farming was also completed. The results revealed the carrying capacity to be 87 000 to 107 000 t per year, which is substantially higher than the present 3 000 t per year.

Marine law enforcement once again became part of the responsibilities of M&CM in November 1995 when the subdirectorate of Marine Control was transferred from Cape Nature Conservation to M&CM. This subdirectorate is responsible for the protection of marine resources along the coast and at sea, and for the management and maintenance of the 12 proclaimed fishing harbours. Their efforts are, however, seriously hampered by a lack of funding, equipment and human resources.



2. THE FISHERY AS A WHOLE

2.1 Total catch

The total catch for 1995 amounted to 591 817 t, which is 8,1% more than in 1994.

The demersal catch of 180 768 t was 6 705 t lower than the 187 473 t caught in 1994. This was mainly due to industrial unrest which disrupted fishing activities and led to hake quotas not being filled.

The pelagic catch of 368 323 t was 53 228 t higher than in 1994. Although the anchovy catch was relatively low, the high pilchard and round herring (redeye) catches compensated for this.

Linefish catches increased by 10%, mainly because of the higher snoek catches in the Cape. In KwaZulu-Natal catches remained stable at 677 t compared with 662 t in 1994.

The West Coast rock lobster TAC was reduced to 2 000 t due to the continued depression in the relative growth rate of the rock lobsters. The South Coast rock lobster TAC was also reduced by 25 t.

The whole mass receiving quota for abalone remained at 615 t, but poaching poses a serious threat to the survival of this resource.

2.2 The information base

The catch figures presented are in the main quite accurate, being a summation of the monthly landings reported by each company in each fisheries sector, a statutory requirement. In the fisheries controlled by TACs, landings usually pass over scales that in some cases are supervised by marine conservation officers. For some fisheries in which the catch is not always landed in the whole (round) state, particularly the demersal fisheries, landings have been converted to nominal catch by the use of scientifically determined conversion factors based on the degree of processing on board by the various fishing concerns. For some smaller fisheries for which numbers only are reported (e.g. the mullet and oyster sectors), a conversion to mass has been made using the best available information.

The monetary values presented in Table II are rather an estimate, not based on a summation of sales of various commodities by companies throughout the year, but on average prices realized as provided by companies consulted in this regard. However, the production figures presented throughout this report and which form one

TABLE I
Total nominal catch and catch per sector of the South African commercial marine fisheries. Foreign fleets excluded.

	Nominal catch (t)	
Fishery sector	1994 1993/94	1995 1994/95
Seaweeds (wet weight)	6 783	8 239
Bait organisms (including red-bait from mussel culture)	14 (2 t white mussels 12 t red bait)	11 (2 t white mussels 9 t red bait)
Mussels and oysters farmed/fattened	2 854	1 996
Picked oysters and marketable wash-ups	75*	150
Abalone	613	613
Whelks and crabs	-	1,5
Periwinkles	0,076	-
Prawns farmed	21	24
Rock-lobster fisheries		
West Coast	2 198	1 959
South Coast	1 067	992
Subtotal rock lobster	3 265	2 951
Crustacean trawl	275	514
Pelagic fisheries	315 095	368 323
Line fisheries		
Tuna	4 069	4 358
Squid jigging	6 442	6 830
Handline fishery	12 985	14 103
Subtotal linefish	23 496	25 291
Harder and St Joseph fishery	1 228	120†
Demersal fisheries		
Offshore	167 103	159 318
Inshore	15 104	15 238
Midwater	4 187	3 228
West Coast gurnard	-	501
Offal (trash fish)	1 079	2 483
Subtotal demersal	187 473	180 768
Hake longline experiment	2 452	1 728
Seals	-	-
Guano	281**	-
Total	543 925	591 817

* Does not include oysters picked in Natal
** Scraped in 1988 but removed in 1994

component in calculating values are mostly regarded as quite accurate. The problem arising from a great variety of product lines produced by different companies is particularly acute in the demersal sector, the most valuable of them all.

2.3 Monetary value of catches and products

The year 1995 was a bumper year for the South African fishing industry. Compared with 1994, total landings increased by 8,1% and the wholesale value by 21,8%. Taking an inflation rate of 8,7% during the same period into account, the increase in the wholesale value becomes even more significant.

The recovery in the South African economy resulted in firm consumer demand and there was real growth in most local fish markets. The bigger demand on the international market for especially whitefish, our most valuable resource, continued during 1995. This enabled companies to expand their range of value added products on several important overseas markets.

Table II portrays the monetary values of the different fisheries during the past two years.

Fisheries constitute a relatively small sector of the national economy and contribute a seemingly insignificant annual average of 0,4% to the Gross Domestic Product. However, it must be remembered that fishing is limited to certain coastal areas, where it is extremely important for the economy of that region.

TABLE II
Estimated values of landings and products of the various South African commercial fisheries.

Fishery sector	Value (R million) Free on board (F.O.B.) value	
	1994	1995
Seaweeds	2,782	4,215
Mussels and oyster farmed (including cultivated prawns)	13,759	23,586
Oysters collected	0,945	1,431
Abalone	53,884	54,054
Rock lobster fisheries		
West Coast	103,995	120,945
South Coast	64,352	64,956
Subtotal rock lobster	168,347	185,901
Crustacean trawl (1994 figure updated)	13,298	11,261
Pelagic fishery (bait included)	289,475	403,835
Linefisheries		
Tuna pole fishery	21,823	24,303
Squid-jigging	69,252	102,390
Handline fishery	73,246	90,253
Subtotal linefish	164,321	216,946
Mullet and St Joseph fishery	2,555	1,753
Demersal fisheries		
Offshore and Midwater	626,268	744,508
Inshore	52,164	60,722
Subtotal demersal fish	678,432	805,230
Hake longline experiment	38,122	26,520
Guano	0,219	0
Total	1,426,139	1,734,732

From Table II it is clear that the monetary value of most sectors increased during 1995. The exceptions were the crustacean trawl fishery, the longline experiment and guano.

The main reason for the 21,8% growth in the total wholesale value of the industry was the increase of respectively 18,7% and 39,5% in the value of the demersal and pelagic sectors.

These two sectors, that contributed nearly 70% of the total wholesale value of the industry, are by far the largest.

Although there were larger proportional changes in the value of other smaller sectors, those sectors are so small that they did not have a significant impact on the overall situation.

Only the results of the four biggest sectors - demersal, pelagic, linefish and rock lobster - which contributed to nearly 94% of the total value of the industry, will be discussed further.

Since a substantial part of demersal earnings is derived from exports, the growing international recognition of South African hake as a high quality and competitively priced whitefish species has enabled companies to obtain firmer prices for their products. This, together with the firmer local demand, more than compensated for the lower catches in this sector. Low catches were the result of the disruption of fishing activities by industrial instability.

The improvement of 39,5% in the value of the pelagic sector was the result of better catches and prices. The price of canned fish improved by nearly 16% per carton, while the much larger pilchard catches enabled the canneries to improve their production considerably. For the first time the linefish sector contributed more (12,5%) towards the total value of the South African fishing industry than rock lobster (10,7%). This was mainly the result of very good international market conditions for squid which allowed local companies to obtain prices on average nearly 40% better than during the previous year.

Although landings in the West Coast rock lobster sector were about 15% lower than in 1994, the total value of the sector increased by 16,3% compared with the previous year. The main reason for this was the strong Japanese yen that resulted in higher export prices and offset the impact of the volume reduction.

2.4 The South African commercial fishing fleet

The licensed South African commercial fishing fleet totalled 4 673 vessels during 1994/95 (Table III). Some 80% of these vessels were smaller than 8 m (dinghies, skiboats and catamarans) used mainly in the rock lobster and mullet fisheries on the West Coast, but also to a considerable extent in the handline (A and B permit-holders) and the squid-jigging fisheries on the South and East Coast. The balance were larger vessels (decked motor boats, purse-seiners and trawlers) used mainly in the fisheries for pelagic and demersal fish, KwaZulu-Natal crustaceans and South Coast rock lobster. In addition to being licensed as fishing vessels, about 90 of the larger vessels were also licensed as factories in 1995. Most of these factory vessels are used in the squid fishery, the rest being mainly trawlers.

The overall fleet showed a substantial increase from the 4 021 licensed vessels in 1993/94, the most significant increase being in the group < 5 m and 5 - 7,99 m. This increase is the result of more permits being split and transferred to more than one vessel.

Permits for the linefishery and squid fishery became freely transferable when the new Sea Fishery Act came into effect on 1 July 1990. Previously these permits were coupled to a particluar vessel. Fishing effort in these sectors is now controlled by limiting the number of crew carried by a particular vessel. It is therefore possible to split crew and permits of a larger vessel between smaller vessels or to combine the crew and permits of two or more smaller vessels on one larger vessel. This leads to regular changes in the size of the entire fleet.

TABLE III: Licensed South African commercial fishing vessels in the fisheries zone of the Republic on the last day (30 June) of the licensing years 1994/95 and 1993/94 (as at 12 September 1995)

Registration area	Registration letters	≥ 4,99 m	5 - 7,99 m	8 - 11,99 m	12 - 19,99 m	20 - 24,99 m	> 25 m	Regional totals
Port Nolloth	PNA	137	3	-	4	-	-	144
Hondeklip Bay	HB	42	-	-	4	-	-	46
Vredendal District (including Doring Bay)	VR	115	1	1	4	-	-	121
Lambert's Bay	ADF	197	24	36	7	8	-	272
Piketberg District (including Elands Bay and Velddrif)	PQ	347	50	3	3	12	2	417
Saldanha Bay area	SBH	216	89	9	15	13	30	372
Vredenburg District (including Paternoster and St Helena Bay)	SH	321	76	28	14	22	11	472
Table Bay area (including Bok Bay and Yzerfontein)	CT	93	199	3	-	-	-	295
Cape Town Harbour	CTA	-	-	5	83	12	76	176
Hout Bay	HTB	6	20	17	75	18	4	140
Simonstown Harbour	STH	3	4	9	4	-	-	20
Simonstown area (including Cape Point and False Bay areas)	ST	136	156	-	-	-	-	292
Kalk Bay	KB	6	25	37	9	-	-	77
Somerset West District (including Gordon's Bay)	SW	77	152	9	5	-	-	243
Caledon and Hermanus Districts (including Hawston)	C	74	60	1	2	-	1	138
Gans Bay (including Klein Bay and Pearly Beach)	DDF	69	53	-	6	7	-	135
Bredasdorp District (including Waenhuiskrans and Struis Bay)	BR	40	130	25	1	-	-	196
Heidelberg District (including Witsand and Infanta)	SM	8	23	-	-	-	-	31
Riversdale District (including Still Bay and Puntjie)	R	34	118	2	-	-	-	154
Mossel Bay	MBA	4	17	11	19	22	3	76
George District	G	4	6	-	-	-	-	10
Knysna District (including Plettenberg Bay)	KN	7	44	2	7	-	-	60
Humansdorp District (including Jeffreys Bay and Oyster Bay)	H	10	129	16	15	-	-	170
Port Elizabeth area	PEA	7	59	16	93	14	8	197
Port Alfred District	P	4	98	11	2	-	-	115
East London area	ELA	3	26	2	2	-	-	33
Durban area	DNA	-	8	13	7	3	24	55
KwaZulu-Natal coast	N	20	186	10	-	-	-	216
Total (1994/95)		1 980	1 756	266	381	131	159	4 673
Total (1993/94)		1 725	1 483	243	311	126	133	4 021

A heavily laden abalone dinghy. Abalone catches remained stable at 613 t in 1995.

TABLE IV: Seaweeds gathered and exported (kg dry mass)

Concession area (C.A.)	Kelp: Mixed *Ecklonia maxima* & *Laminaria* spp.		*Gelidium* spp.		*Gracilaria verrucosa*		Total	
	1994	1995	1994	1995	1994	1995	1994	1995
Gathered								
1	-	-	87 041	73 312	-	-	87 041	73 312
2-4	-	-	-	-	-	-	-	-
5-8	9 869	113 621	-	-	-	-	9 869	113 621
9	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-
11	-	23 783	-	-	-	-	-	23 783
12	-	-	-	-	-	-	-	-
13-14	432 936	202 585	-	-	-	-	432 936	202 585
15	-	192 063	-	-	-	-	-	192 063
16	-	132 612	-	-	-	-	-	132 612
17	-	-	-	-	272 467	439 326	272 467	439 326
Total	442 805*	664 664†	87 041	73 312	272 467	439 326	802 313	1 177 302
Exported								
Total	411 913	481 158	95 365	46 668	963 345	320 858	1 470 623	848 684

* Excludes 364 768 kg wet mass (dry mass c. 54 715 kg if 85% moisture assumed) of kelp harvested in Area 9
† Excludes 315 615 kg wet mass (dry mass c. 47 342 kg if 85% moisture assumed) of kelp harvested in Area 9

3. FISHERY SECTORS

3.1 Seaweeds

The small but healthy South African commercial seaweed industry is based on the collection of kelp (mainly *Ecklonia*, with some *Laminaria*) from shores between Cape Agulhas and Port Nolloth, *Gracilaria* from Saldanha Bay, and *Gelidium* from the Eastern Cape. For management purposes the coast of the old Cape Province was divided into 17 concession areas. Access to seaweed resources is controlled by permit, with one concession holder per area. The coasts of the former Ciskei and Transkei were previously not under the jurisdiction of the South African Department of Environmental Affairs and Tourism, and records of seaweed collections in those areas are incomplete for 1995 and have been omitted from Table IV.

Beach-cast kelp is exported mainly for the extraction of alginate, although one concessionaire now exports substantial quantities to the Far East for the production of a fish feed for mariculture. Collections increased in 1995 in response to more favourable overseas markets, but remain well below the more than 5 000 t that were obtained in the early 1970s.

Kelp (*Ecklonia maxima*) is harvested near Kommetjie on the Cape Peninsula for the production of a liquid plant growth stimulant. This product is finding increasing markets worldwide, and is now exported to every continent on the globe.

As a result of unusually bad weather, harvests of the agar-producing seaweed *Gelidium* in the Eastern Cape were slightly lower than last year. This high-quality seaweed was exported to the Far East. The other agarophyte, *Gracilaria*, continues to wash ashore in large quantities at Saldanha Bay, and the yield has almost doubled since 1994. Exports went mainly to Japan and Korea. The unpredictability of yields at Saldanha has led to experimentation with mariculture of *Gracilaria*, and encouraging results have led to several applications for water space at Saldanha and in St Helena Bay.

3.2 Bait organisms

Bait permits are issued only to individuals who have direct marketing outlets to anglers. There are currently eight permits active for the collection of white mussel *Donax serra* on the West Coast. Total landings for 1995 were 46 474, compared with 44 724 for 1994.

No landings of the sand clam *Mactra glabrata* were recorded for 1994 or 1995.

The permit issued to an abalone canning factory in Hermanus allowing them to market the red bait *Pyura stolonifera* adhering to abalone shells was not renewed. From the Saldanha area red bait is harvested as a by-product of the mussel farming industry, and a total of 6 560 kg was harvested in 1995, compared with 11 950 kg in 1994, 9 800 kg in 1993 and 573 kg in 1992.

3.3 Mariculture

Production figures for the South African mariculture industry did not increase during 1995, but proposed developments in this industry are encouraging.

A total of 35 permits was issued to, or renewed by, 24 different concerns during 1995, compared with 41 permits during 1994. Of these, 12 were for the farming of oysters, 13 for abalone, five for black mussels, two for red bait, one for prawns, one for clams and one for mud crab.

The cultivation of oysters takes place mainly at Knysna, Port Elizabeth, Saldanha Bay, St Francis Bay, Port Nolloth, Port Alfred and Alexander Bay. Production figures for the cultivated oyster *Crassostrea gigas* totalled 4,1 million during 1995, which is slightly down on the record 4,8 million produced during 1994. These oysters are sold fresh on the local market.

Local spat production, which was initiated in St Helena Bay during 1993, resulted in the production of 15 million seed oysters being made available to local producers during 1994. During 1995, 5,5 million seed oysters were sold and a stock of 4,8 million retained. This will undoubtedly help to reduce demand for imported foreign stock in future.

Permits for the cultivation of the Mediterranean (or black) mussel *Mytilus galloprovincialis* have been issued to concerns operating at Saldanha Bay, Stompneus Bay and St Francis Bay. In total, 1 680 t were produced in Saldanha Bay during 1995, substantially less that the 2 982 t produced during 1994 and the 1 891 t produced during 1993. Approximately 9% of the mussels are sold fresh, 90% frozen (a small portion being processed) and 1% smoked or canned.

The first shipment of "cocktail" abalone *Haliotis midae* took place during September 1994 and shipments continued intermittently. About 2 000 "cocktail" abalone were exported during 1995. However, abalone farming is still considered to be in the advanced developmental stage.

TABLE V: Commercial oyster production and marketers

Locality/Product	Number of size oysters		Number of marketers*
	1994	1995	1995
Natural picked and marketable "wash-ups"	559 385	738 943	14
Cultivated and fattened wash-ups			
Saldanha Bay	847 930	887 789	3
Knysna	3 328 615	2 775 371	2
Port Elizabeth	390 000	180 000	1
Other†	217 840	278 862	5
Subtotal cultivated and fattened	4 784 385	4 102 022	11
Total	5 343 770	4 840 965	25

* Marketers involved in more than one concession area or activity were counted separately for each

† Alexander Bay, Port Nolloth, St Francis Bay and Port Alfred

TABLE VI: Commercial oyster production in KwaZulu-Natal

Year	1990	1991	1992	1993	1994	1995
No.	405 700	571 800	448 800	362 100	387 000	505 300

Landings in the West Coast rock lobster sector were 15% lower than in 1994, but earnings increased by 16,3%.

Farming operations are being developed at Danger Point, Hermanus, Port Nolloth, Stompneus Bay, Hout Bay and Port Elizabeth.

The farming of prawns *Penaeus monodon, P. japonicus* and *P. indicus* takes place at Amatikulu in KwaZulu-Natal. During 1995, 24 t were produced as opposed to 21 t in 1994, and somewhat less than the 35 t produced in 1993. Brood stock is collected from the wild for this purpose.

During 1995, a three-year study to determine the carrying capacity of Saldanha Bay for mussel farming was completed. The results showed that the carrying capacity of the main 1 000 ha area allocated in Big Bay for mussel farming is 87 000–107 000 t per year. Mussel production is likely to begin a new growth phase in 1996/97 with water becoming available to both community-based and industrial scale farming. M&CM will be co-operating more closely with the Department of Agriculture (DA) with a view to strengthening the State's role in the development of mariculture. An forum will be set up to speed up communication and response to bilateral concerns.

3.4 Wild oysters

The number of "wild" oysters *Striostrea margaritacea* collected from the intertidal area along the South Coast by "pickers" increased from 559 385 in 1994 to 738 943 in 1995 (Table V). During the same period the number of pickers increased from 134 to 163. However, further significant increases cannot occur, as the total permit allocation is limited to 178. The increased production, which contrasts with the trend of previous years, is presumed to be due to a continuing increased market demand nationally, mainly from the tourism sector, although favourable sea conditions may also have played a part.

A small oyster fishery also exists in KwaZulu-Natal, and data from this (previously unreported in this publication) indicate that reasonably stable landings of around 440 000 p.a. have been achieved (see Table VI).

3.5 Abalone

There were two new entrants (divers) into the industry, and 21 of the 51 entitlement holders are now employing assistant divers. The three abalone diver associations amalgamated into one: the Overberg Abalone Divers Association.

Management of this fishery continues to rely for its baseline data on catch rates of commercial divers and the average sizes of abalone landed in the seven fishing zones. After extensive experimental design planning, a new series of diving surveys was initiated in 1995, which are yielding valuable data on stock abundance and sizes. In three to five years' time these data should provide a fishery-independent index of abundance against which the catch per unit effort (*cpue*) trends can be evaluated.

Catch and *cpue* for each zone for the past two seasons are shown in Table VII, and in Figure 1 trends in *cpue* from 1990/91 to 1994/95 for zones A to D are presented. Together these zones yield 93,5% of the commercial abalone TAC. Catch rates for zones A and B remain relatively high with minor fluctuations. Zone C, the Mudge Point/Hermanus area, remains depressed despite a series of TAC reductions from 170 t in 1990/91 to 130 t in 1994/95. This TAC is always the last to be completed by the commercial divers, and two season extensions were granted during 1994/95 to enable the TAC to be filled. This zone is unlikely to recover in the near future owing to the severe inroads made by poachers, and further declines are to be expected. After the unnaturally sharp increase in *cpue* shown in zone D, which resulted from divers concentrating on accumulated stocks from a recently opened area, the *cpue* appears to be returning to more realistic levels, reflecting a return to more typical levels of abalone abundance. Robben Island (zone F: not shown), which still has a high proportion of old accumulated stocks, continues to show catch rates fluctuating at a high level. Dyer Island (not shown), closed to fishing in 1983, was re-opened at a conservative 25 t TAC in 1991. This TAC has been maintained up to the present. This area is being retained at above-average stock density as a conservation measure, and the TAC is removed by all the divers (each collecting a fixed percentage of the TAC) over a short pre-arranged period, before the area is again closed for the rest of the season. Zones E and G have been closed since 1989 because of an inability to sustain commercial fishing (apparently owing to recruitment irregularity), and both these grounds are reserved for recreational use.

The whole mass receiving quota for the 1994/95 commercial season (15 October 1994 - 31 July 1995) was again based on recommendations initially submitted by M&CM researchers to the Sea Fisheries Advisory Committee. The sum of the TACs for zones A to D and F remained at 615 t, with no changes being made in the individual zones. The fishery continues to rely on the traditional fishing grounds east of Hangklip, as opposed to the less productive West Coast.

An interesting marketing development during 1994/95 was the increasing trend towards export of live abalone (Table VIII). These abalone are selected from normal diver deliveries and kept in holding facilities after which they are flown to the East in oxygen-filled polystyrene containers. In a further diversification of markets, a small quantity of dried abalone was also exported. Poor market prices in the East resulted in approximately 33% of production being held back, pending improved markets.

TABLE VII
Catch and catch rate (*cpue*) for the seven abalone fishing zones for the 1993/1994 and 1994/1995 seasons

Zone	Area	Catch (t)		Catch rate (kg.diver-h^{-1})	
		1993/94*	1994/95	1993/94*	1994/95
A	Quoin Point - Pearly Beach	193	208	165	150
B	Franskraal - De Kelders	150	152	146	160
C	Hermanus - Hawston	135	123	119	108
D	Kleinmond - Holbaai Point	93	90	188	165
E	Cape Point - Mouille Point	-	-	-	-
F	Robben Island - Dyer Island	25	25	172	169
G	Table Bay - Cape Columbine	-	-	-	-
	All zones	613	613	153	145

* Updated

TABLE VIII
Commercial production of abalone

Commodity (kg)	1993/94	1994/95
Canned products*	118 959	64 949
Frozen pieces*	15 599	14 290
Frozen whole	1 913	1 691
Fresh/Live (in shell)	25 211	81 423
Dried abalone*		33
Total	161 682	162 386

* To convert to whole mass, multiply canned products by 4, frozen pieces by 3 and dried abalone by 10

Poaching of abalone, in particular from the Mudge Point/ Hermanus area, is a continuing threat to the resource, and indications are that these activities are not only continuing, but spreading to other areas, including the marine reserve at Betty's Bay, and as far afield as Buffeljags. Measurements of confiscated samples still indicate that a high proportion of poached abalone is undersize. Abalone tend to form dense aggregations in the easily accessible shallow inshore areas, and it is these aggregations which are frequently targeted by poachers. This means that many abalone are removed from the population before attaining sexual maturity. A possible reduction in egg production may negatively influence the sustainability of present harvest levels.

After significant expansion in previous years the recreational sector of the fishery is substantial. Estimates derived from telephone surveys indicate landings of almost 550 t in 1993/94, and 446 t in 1994/95. Management measures to curtail further expansion of this important sector have yet to be implemented, and await guidelines from the new fisheries policy.

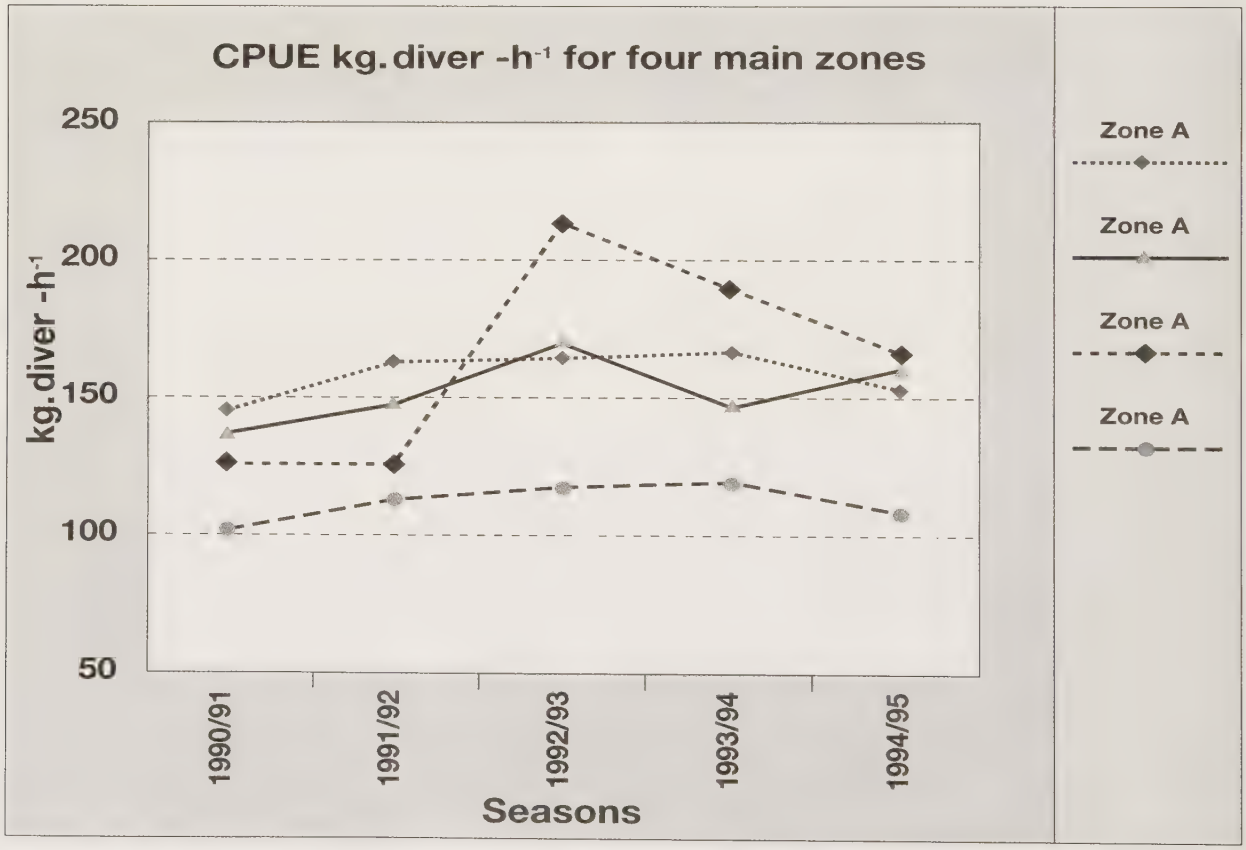


Figure 1: Trends in catch per unit effort (*cpue*) of abalone in the four main commercial diving zones, 1990/91-1994/95

3.6 Limpets

Owing to marketing problems, this fishery has never progressed beyond the stage of initial research and limited test marketing.

3.7 Periwinkels

An experimental permit was issued for the harvesting of 30 t of *Turbo cidaris* and 9 t of *Oxystele sinensis*. Fishing was to take place at low intensity (10%) at Vermont near Hermanus, medium intensity (30%) at Danger Point near Gansbaai and high intensity (50%) at Holbaai near Cape Hangklip. A researcher from the University of Cape Town was contracted to carry out biological, morphological and population estimates on the topshell species. Total commercial landings amounted to a few small samples for harvesting purposes.

3.8 Whelks and crabs

The one participant in this fishery operates along the West Coast from a large skiboat using modified ring nets in shallow sandy areas. Three fishing trips in 1995 yielded a total of 1 500 kg of whelks *Bullia laevissima*, with no crab *Ovalipes trimaculata* by-catch.

3.9 Cephalopods

In some cephalopod fisheries catches fluctuate widely from year to year in an unpredictable manner. This is typical of several squid species of the family Ommastrephidae. Total annual catches of squids of the family Loliginidae, including South African chokka squid *Loligo vulgaris reynaudii*, are generally much more stable.

Squid can be taken year-round, with some prominent peaks mainly in spring and early summer. However, as fishing expertise improves and real fishing effort increases, a trend of catching year-round is becoming more prominent. This has an impact on the fishers, because squid is the object of the only directed cephalopod fishery in South Africa. At the same time, this calls for careful and conservative management of the resource owing to a hidden increase in effort. Control measures currently take the form of a permit system, with more than 300 boats of very diverse size (Table IX) with a variable number of active fishers and an annual closed season of variable duration (four weeks in 1995).

TABLE IX
Permits for jigging (C), jigging with area restrictions (CR), transporting (X) and processing (CF) squid issued to licenced South African fishing vessels as on the last day of the squid permit year (25 October) of 1994/95 and 1993/94

Permit type/ Registration area*	SH	SBH	CTA	HTB	KB†	C	DDF	BR	MBA†	G	KN†	H	PEA	P†	N	ELA	Total boats	Total squid permits
1994/95																		
C	2	-	2	15	3	-	1	-	3	-	7	68	66	11	-	1	179	179
Cr	-	-	6	-	31	-	-	-	3	-	3	-	1	20	-	-	58	58
X	-	-	-	-	-	-	-	-	-	1	1	23	1	2	-	-	28	28
CF	-	-	1	11	2	-	1	-	-	-	-	5	30	-	-	1	51	51
1993/94																		
C	2	-	3	16	2	1	1	-	6	-	7	74	54	4	1	-	171	171
Cr	1	-	33	13	2	-	-	-	1	-	-	3	31	-	-	1	85	85
X	-	-	-	-	-	-	-	-	1	1	1	21	1	-	-	-	25	25

* The codes for registration area are explained in Table III

† Permit-holders may only operate in the KB, KN and P areas (one permit in MBA)

TABLE X
Squid catches (t) by various sectors of the fishery

Sector	1994*	1995
South African trawl		
Red squid	43	19
White squid (chokka)	500	339
Subtotal S.A. trawl	543	358
Crustacean trawl	1	2
Jigging	6 442	6 830
Total all sectors	6 986	7 190

* Updated

TABLE XI
Cephalopod catches (in kg) off KwaZulu-Natal by the East Coast crustacean fishery

Species	1994	1995
Squid	1 358	2 324
Octopus	2 134	22 884
Cuttlefish	5 367	17 189
Total	8 859	42 397

These limitations do not take technical and logistic improvements in the fishery into consideration. These include replacement of smaller boats by larger craft, including nominally non-fishing crew into the team (e.g. packers), increasing use of lights, and use of support vessels. Another important factor is the development of new fishing grounds as a result of increased skippers' expertise, and independence from the shore for longer periods. In recent years there has been a considerable shift of the fishery to the east and to grounds farther offshore. Traditional spawning grounds range from Plettenberg Bay to Port Alfred, but recently spawning squid were found close inshore in areas such as Hamburg and East London.

In the mid-1980s the squid jigging fishery began to replace an, until then, mainly trawl by-catch fishery. In the last three years catches have been stable, increasing slowly and steadily from 6 308 t in 1993 to 6 830 t in 1995 (Table X). In 1995 the highest catches were made in October (1 002 t), but abundance was probably greatest in November, when 432 t were caught in 10 days (the rest of the month was closed season). The biomass index estimated from a survey by the F.R.S. *Africana* was above average. The best areas in 1995 were Port Elizabeth (1 723 t), Jeffreys Bay (1 439 t) and Algoa Bay (1 158 t).

As in previous years, trawled squid constituted only a small portion of the total squid catch. In 1995, trawl catches dropped slightly to 339 t, compared with 500 t in the previous year (Table X), which is in line with the general declining trend of trawl by-catch of squid. This trend has been prominent despite the average or above average levels of abundance measured during research surveys.

Red squids catches (mainly *Todaropsis eblanae* and some *Todarodes angolensis*) declined even further to an all time low of only 19 t (Table X).

The catch of Indian Ocean luminous squid *Loligo duvauceli*, reported from the East Coast crustacean trawl fishery, increased slightly, but remained very low at only 2 t (Table X). In contrast, catches of octopods and cuttlefish increased markedly, from 2,1 t to 22,9 t and from 5,4 t to 17,2 t respectively (Table XI). Part of this increase, however, may be artificial owing to a change in the data collection procedures between these years. In 1994, data were collected and collated in-house by researchers, but in 1995 data were supplied directly by industry sources and should be treated as preliminary at this stage.

The bycatch of Octopus (mainly *O. magnificus*) in the deepsea trawling sector declined further (from 91 t in 1994 to 34 t in 1995). Octopods are not directly exploited (except in artisanal, shore-line collections along the coast) but there is some interest in developing an experimental pot fishery for octopods in the future.

3.10 Crustaceans

3.10.1 West Coast rock lobster

Regulations governing the minimum legal size for the commercial rock lobster fishery remained unchanged from the 1993/94 season at 75 mm carapace length. However, the TAC was reduced to 2 000 t owing to the continued depression in animal growth rates. To further protect the stock below the minimum legal size, at least 10% of commercial traps were required to be modified to include an escape-gap grid (44 mm gap width).

The recent trend of decreasing trap *cpue* in the northern areas of the fishing grounds (Areas 3, 4 and 5) persisted and was extended to the southern grounds (Areas 6, 7 and 8) during the 1994/95 season. In contrast, *cpue* in the Hout Bay and False Bay areas exhibited a moderate

TABLE XII: Actual catches of West Coast rock lobster in 1993/94 and 1994/95 and total allowable catches (TACs) for the 1993/94 and 1994/95 seasons per fishing zone.

Area	Number	Zone	Actual catch (t)		*TAC* (t whole)	
			1993/94	1994/95	1993/94	1994/95
Port Nolloth	1	A	39	27	40	46
Hondeklip Bay	2					
Lambert's Bay	3	B	5	69		
Elands Bay	4		550	433	480	494
St Helena Bay	5	C	370	130	400	123
Saldanha Bay	6					
Dassen Island	7	D	342	316	340	345
Cape Peninsula†	8		828	929	880	935
Hout Bay/Oudeschip	10		32	28	30	30
False Bay	11	E	32	27	30	27
Total			2 198	1 959	2 200	2 000

† Allocation for Robben Island included with that for the Cape Peninsula

TABLE XIII: Sales of West Coast rock-lobster products

Commodity (kg as specified)	Export		Local		Total	
	1993/94	1994/95	1993/94	1994/95	1993/94	1994/95
Frozen tails*	43 065	21 066	13 703	2 353	56 768	23 419
Frozen tails#	(143 026)	(69 963)	(45 510)	(7 815)	(188 536)	(77 778)
Whole cooked, frozen	897 040	639 750	149 217	107 688	1 046 257	747 438
Whole raw, frozen	267 584	541 670	31 357	38 398	298 941	580 068
Live	564 140	664 140	73 996	73 439	638 136	737 579
Total	1 771 829	1 866 626	268 273	221 878	2 040 102	2 088 504
Total (whole mass)	(1 871 790)	(1 915 523)	(300 080)	(227 340)	(2 171 870)	(2 142 863)

* To convert to whole mass, divide by 0,3011
\# As whole mass

increase with respect to the previous season. Records show that catches approached or exceeded TACs in all zones with the exception of Zone A, where only 59% of the zonal TAC was landed (Table XII).

The zonal TAC regulations again resulted in a high proportion of the TAC assigned to Zone B being reported from Area 4 (Elands Bay). Nevertheless, in comparison to the 1993/94 season, the catch (both in relative and absolute terms) from Area 3 (Lambert's Bay) during 1994/95 increased substantially (Table XII).

Comparative market sales figures for the 1993/94 and 1994/95 seasons (Table XIII) indicate that the increase in export sales of live lobsters noted since the 1992/93 season has persisted, showing an improvement of 18% on the 1993/94 figures. Local sales of live lobsters have remained fairly constant. Although whole cooked lobsters still command the majority share in the retail market (36% by mass), this commodity has lost ground to whole raw lobsters, which have achieved improved sales on both local and export markets in comparison with the 1993/94 season, now representing 28% (by mass) of sales, an increase of 94%. Following trends from recent seasons, frozen lobster tails account for the minority of sales (1% by mass and 4% by catch) and showed a decrease of 59% on the previous season.

TABLE XIV

Catch (kg) and catch per unit effort (kg.trap-day^{-1}) in the four areas of the South Coast rock lobster fishery

Area	1993/94		1994/95	
	Catch	*Cpue*	Catch	*Cpue*
Port Alfred	39 877	0,163	43 972	0,177
Port Elizabeth	102 616	0,161	126 155	0,127
St Francis	264 503	0,160	183 692	0,122
Agulhas Bank	72 035	0,129	107 610	0,155
Total	479 030	0,155	461 429	0,134

3.10.2 South Coast rock lobster

As a result of extensive mathematical modelling in 1994 which incorporated changes in fishing efficiency, it was estimated that catch rates (and hence biomass) of South Coast rock lobster were declining at about 2% per annum. The TAC for the 1994/95 season was therefore decreased by 25 t, from 477 t to 452 t tail mass. Of this decreased TAC, 426 t were allocated to South African waters, 24 t to the area between the Great Fish and Keiskamma rivers (the former Ciskei) and 2 t were reserved for research purposes.

Total fishing effort reported for the South Coast fishing grounds in 1994/95 was 3,4 million trap hauls, compared with 3,1 million trap hauls reported in 1993/94. Most effort was reported from the St Francis fishing grounds (44%) followed by Port Elizabeth (29%), the Agulhas Bank (20%) and Port Alfred (7%). Catches at St Francis decreased by 31% compared with 1993/94, but at the Agulhas Bank, Port Elizabeth and Port Alfred fishing grounds, catches increased by 49%, 23% and 10% respectively (Table XIV). Catch per unit effort for the South Coast rock lobster fishery decreased from 0,155 to 0,134 kg.trap-day^{-1} (Table XIV).

As could be expected after the decrease in the TAC, sales of South Coast rock lobster products decreased from 496 020 to 425 441 kg tail mass (Table XV) in 1994/95. Of the total production, 44 307 kg tail mass were sold on local markets, and 381 134 kg exported. The upwards trend previously shown by the live lobster category continued in 1994/95, and live lobsters now represent 17% (by tail mass) of total sales compared with 13% in the previous season. Fewer frozen tails and whole frozen lobsters were sold than in previous years, but frozen lobster tails remain the most important product of the fishery, with a market share of 77% by mass.

TABLE XV

Production of South Coast rock-lobster commodities

Commodity (kg as specified)	1993/94	1994/95
Frozen tails	388 634	328 161
Whole raw, frozen*	85 398	52 294
Whole cooked, frozen*	7 049	405
Live*	138 493	156 505
Total	619 574	537 365

* To convert whole mass to tail mass, multiply by 0,465

3.10.3 East Coast crustaceans

Although the trawling grounds off Kwazulu-Natal are isolated from the southern Mozambique grounds by a marine reserve and a steep narrow continental slope area near the border, the South African fishery is very similar to the much larger Mozambique fishery, both in regard to the species caught and to its two distinct components, i.e. an inshore resource occurring shallower than 70 m depth and consisting largely of Penaeids, and an offshore resource occurring between 200 m and 600 m deep and consisting of various species of deep-water prawn, langoustines, rock lobster, crabs and a by-catch of fish and cephalopods.

Of the eight permits issued for prawn trawling in South African waters in 1995, five allowed vessels to trawl within seven nautical miles of the coast, allowing access to the inshore resource, while the remaining three vessels were restricted to the offshore resource outside the seven nautical mile limit. In 1994, the company to whom all licenses belonged was liquidated, and the licenses were redistributed between four companies. In the process some of the smaller vessels were replaced by larger vessels to counter current and weather conditions on the deeper grounds.

TABLE XVI
Landings (kg whole mass) in KwaZulu-Natal of the East Coast crustacean trawl fishery

Species	1994†	1995
Inshore prawns (Tugela)	84 200	32 357
Offshore prawns	166 800	132 622
Langoustine	116 500	63 624
Shrimps	3 967*	9 271
East Coast deep-water rock lobster	30 400	13 326
Slipper lobster	-	368
Inshore crab (Tugela)	286*	1 785
Offshore crab (Red)	180 500	146 258
Squids	1 358*	2 324
Octopus	2 134*	22 884
Cuttlefish	5 367*	17 189
Fish	17 808*	70 372
Total	609 320	412 380

† Updated
* Partial statistics due to underreporting

Catches of target crustaceans in South African waters were much lower in 1995 compared with 1994 (Table XVI). Catches made in Mozambican waters are landed in Maputo. Little information on the quantities landed there is currently available.

In addition to the trawl fishery, 50 t whole mass of deep-water rock lobster *Palinurus delagoae* and 9,8 t of Cape slipper lobster *Scyllarides elisabethae* were caught in an ongoing experiment investigating the viability of catching these species with longlines and traps. The experimental TAC of 104 t whole mass for the two species combined for 1995 could not be achieved by the two vessels conducting the experiment, owing to the onset of strong currents that submerged fishing gear after August. A combined figure of catches of *Palinurus delagoae* made by the trap and trawl fisheries is 63,3 t for 1995, far less than the 119,9 t caught in 1994, when three vessels took part in the experimental fishery.

3.11 Pelagic fish

3.11.1 Catch

Total pelagic catches in 1995 reached 368 000 t, compared with the 315 000 t caught in 1994. In spite of the relatively small anchovy *Engraulis capensis* catch of 170 000 t, the catch of most of the other pelagic species showed an increase. The total pilchard *Sardinops sagax* catch of 115 000 t was the highest since 1976, while the 77 000 t of round herring *Etrumeus whiteheadi* caught represented the highest catch on record (Table XVII).

The November 1994 biomass estimate for anchovy was 476 000 t, which meant that, in accordance with the accepted management procedure, "exceptional circumstances" were considered to be prevailing. Under those conditions an anchovy TAC of 180 000 t was recommended for 1995. By the end of June, approximately half of the TAC had been caught, but the results from the recruitment survey indicated that recruitment had been above average and the TAC value arising from application of the procedure would have been calculated as 330 000 t. However, taking into consideration the record by-catch levels of pilchard observed and the fact that little by-catch was left at the time of the mid-year revision, the anchovy TAC recommended was only 240 000 t.

After the November 1994 survey, the pilchard resource had been estimated to be in a much healthier state than that of anchovy and the recommended directed TAC for that species was 60 000 t. On the basis of the 240 000 t anchovy TAC, the pilchard by-catch TAC was set at 18 500 t. However, the results from the June 1995 survey indicated that pilchard recruitment had been the best in the time-series at 26 billion fish and, as a result, the by-catch TAC was raised to 47 000 t. The South African Inshore Fishing Industry Association then requested to trade a portion of the pilchard by-catch into directed adult catch at a ratio of 1:3. The anchovy TAC was further adjusted appropriately to retain the by-catch percentage at a maximum of 20%.

Round-herring catches reached 76 660 t, a record figure that took away some of the pressure from the anchovy while contributing to the South African fishmeal requirements without inflicting unacceptably high levels of mortality on juvenile pilchard. The resource was available during the first half of the year, catches declining rapidly from June onwards.

Chub-mackerel *Scomber japonicus* catches were low (2 660 t) and declined from the levels of the previous year. Catches of horse mackerel *Trachurus trachurus capensis*, although well spread throughout the year, decreased to less than a quarter of those caught in 1994.

TABLE XVII: Landings of South African pelagic fish in 1994 and 1995

Month	Anchovy		Pilchard		Horse mackerel		Chub mackerel		Round herring		Lanternfish		Other*		Total	
	ton	%	ton	%	ton	%	ton	%	ton	%	ton	%	ton	%	ton	%
January	89	0,1	3 070	2,7	32	1,6	118	4,4	9 783	12,7	8	0,9	13	3,0	13 113	3,6
February	406	0,2	6 743	5,9	93	4,7	732	27,4	32 546	42,3	50	5,8	14	3,1	40 583	11,0
March	20 440	12,0	12 747	11,1	249	12,5	341	12,8	18 552	24,1	648	75,1	98	22,4	53 074	14,4
April	22 749	13,4	7 027	6,1	119	6,0	52	2,0	5 125	6,7	133	15,5	11	2,4	35 217	9,6
May	13 473	7,9	16 113	14,0	582	29,2	74	2,8	9 881	12,9	4	0,4	15	3,5	40 143	10,9
June	33 291	19,5	10 530	9,1	196	9,9	267	10,0	374	0,5	-	-	8	1,8	44 666	12,1
July	30 071	17,7	10 448	9,1	74	3,7	570	21,4	114	0,1	-	-	30	6,9	41 308	11,2
August	36 795	21,6	19 687	17,1	237	11,9	288	10,8	201	0,3	-	-	137	31,5	57 345	15,6
September	1 873	1,1	8 705	7,6	317	15,9	163	6,1	106	0,1	2	0,2	56	12,9	11 223	3,0
October	9 899	5,8	13 976	12,1	62	3,1	59	2,2	159	0,2	9	1,1	43	9,8	24 207	6,6
November	1 222	0,7	5 449	4,7	29	1,5	1	0,1	7	-	8	1,0	11	2,6	6 729	1,8
December	-	-	703	0,6	-	-	-	-	10	-	-	-	-	-	713	0,2
Total (1995)	170 308	100	115 201+	100,1	1 991	100	2 668	100	76 858	99,9	862	100	435	100	368 323	100
Percentage		46,2		31,3		0,5		20,9		0,7		0,2		0,1		100
Total (1994)	155 553	100,1	93 438†	100,2	8 211	100,1	2 039	99,8	54 147	100,0	871	99,9	836	100,2	315 095	99,8
Percentage		49,4		29,7		2,6		0,6		17,2		0,3		0,3		100,1

* Juvenile gurnard, mantis shrimps, snoek, ribbonfish, hake, and jellyfish but also small quantities of other species
† Pilchard-directed catch in 1994 amounted to 48 954 t and the by-catch to 44 484 t

TABLE XIX: Permits issued to licensed South African vessels to purse-seine pelagic fish, as at the end of the pelagic permit year (31 December)

Registration Area/Permit Type	ELA	ADF	PQ	SH	SBH	CTA	HTB	KB	C	DDF	PEA	Total permits	
												1995	1994
P2-privately owned	-	-	6	2	1	-	-	-	-	7	-	16	17
P3-factory owned	-	7	7	25	6	-	6	-	-	-	1	52	55
P4-human consumption	-	-	1	1	2	-	1	-	-	-	-	5	5
M-pilchard bait (dead)	-	1	2	6	-	4	5	4	1	2	6	31	32
Z-live bait	1	-	-	1	-	2	1	-	-	-	1	6	8
Total pelagic permits issued	1	8	16	35	9	6	13	4	1	9	8	119	117
1 pelagic permit per vessel	1	7	7	21	7	6	9	4	1	2	5	70	90
2 pelagic permits per vessel	-	2	4	10	-	-	-	-	-	4	1	21	10
3 pelagic permits per vessel	-	-	-	-	-	-	-	-	-	-	1	1	1
4 pelgaic permits per vessel	-	-	-	1	-	-	-	-	-	-	-	1	-
Total vessels	1	9	11	32	7	6	9	4	1	6	7	93	101

The codes for registration areas are explained in Table III

3.11.2 Fishing fleet

There were 119 pelagic permits in operation at the end of the pelagic permit season (31 December), compared with 117 permits in 1994 (Table XIX).

The number of privately owned vessels (P2) and factory-owned vessels (P3) decreased by one and three respectively in 1995.

One more permit was issued to catch anchovy for human consumption, but the total remained low at five. This was as a result of the reduced availability of large anchovy for human consumption and therefore reduced quotas. The number of vessels permitted to purse-seine primarily for bait (M) decreased by one and those catching live bait for tuna-fishing (Z) decreased even further to six from the eight of the previous year.

Most (70) pelagic vessels had a single purse-seining permit. Of the remainder, 21 vessels held two such permits. One vessel had four permits, comprising one P4, two P3 and a M permit.

3.11.3 Production

While the total 1995 catch showed an increase of only 17% against that of 1994, the relevant canning figure rose by 73% (18 845 t). Fishmeal production consequently dropped by 23 406 t (35%) and the amount of body oil produced by 1 340 t (25%) (Table XVIII).

TABLE XVIII: Pelagic fishing industry: production of South African factories in 1994 and 1995

Month	Meal		Body oil		Canned									
					Anchovy		Pilchard		Horse mackerel		Round herring		Total	
	ton	%	ton	%	kg	%	kg	%	kg	%	kg	%	kg	%
January	1 244	2,8	36	0,9	-	-	731 603	1,7	-	-	279 664	17,4	1 011 267	2,3
February	4 386	9,7	210	5,3	-	-	3 563 841	8,5	-	-	882 092	54,9	4 445 933	10,0
March	6 895	15,3	1 180	29,7	37 527	11,6	4 831 155	11,5	-	-	265 678	16,5	5 134 360	11,5
April	4 249	9,4	837	21,1	55 290	17,1	5 380 543	12,8	16 568	2,7	106 153	6,6	5 558 554	12,5
May	4 414	9,8	531	13,4	-	-	5 516 366	13,1	-	-	20 015	1,3	5 536 381	12,4
June	6 254	13,9	289	7,3	97 844	30,3	2 917 186	6,9	148 328	24,4	53 521	3,3	3 216 879	7,2
July	4 921	10,9	249	6,3	131 955	40,9	2 947 404	7,0	206 143	33,9	-	-	3 285 502	7,4
August	7 912	17,6	359	9,0	-	-	3 795 560	9,0	111 654	18,4	-	-	3 907 214	8,8
September	1 289	2,9	40	1,0	-	-	5 281 340	12,5	95 624	15,7	-	-	5 376 964	12,0
October	2 783	6,2	123	3,1	-	-	5 258 551	12,5	29 317	4,8	-	-	5 287 868	11,8
November	725	1,6	122	3,1	-	-	1 430 781	3,4	-	-	-	-	1 430 781	3,2
December	5	-	-	-	-	-	451 147	1,1	-	-	-	-	451 147	1,0
Total (1995)	45 077	100,1	3 976	100,2	322 616	99,9	42 105 477	100	607 634	99,9	1 607 123	100	44 642 850	100,1
Percentage						0,7		94,4		1,5		3,4		100,0
Total (1994)	68 483		5 312		764 613		25 434 985		-		580 638		26 780 236	
Percentage						2,9		95,0		-		2,2		100

TABLE XX

Permits issued to licensed South African commercial (A) and semi-commercial (B) linefishing and tuna (T) fishing vessels as on the last day of the linefishing permit year (30 June) 1994/95 and 1993/94*

Registration area/ Permit type	A	AT	B	BT	T	Total
PNA	-	-	55	-	-	55
HB	-	-	22	-	-	22
VR	-	-	119	-	-	119
ADF	-	-	238	8	1	247
PQ	-	-	240	3	4	247
SH	1	1	202	20	30	254
SBH	1	1	154	21	22	199
CT	5	3	204	64	56	270
CTA	5	1	105	85	93	289
HTB	14	13	72	43	74	216
STH	1	1	18	9	9	38
ST	7	3	214	69	71	364
KB	38	18	25	10	23	114
SW	14	4	168	24	26	236
C	2	-	97	5	3	107
DDF	33	3	73	7	8	124
BR	66	15	89	11	18	199
SM	2	-	22	-	-	24
R	10	-	109	5	2	126
MBA	11	-	40	20	17	88
G	-	-	7	1	1	9
KN	5	5	31	4	5	50
H	32	25	77	36	47	217
PEA	53	32	60	33	57	235
P	24	7	50	5	13	99
ELA	7	1	16	3	4	31
DNA	9	2	18	1	4	34
N	119	29	25	8	27	208
Total 1994/95	459	164	2 550	495	615	4 021
Total 1993/94	306	164	2 049	495	105	3 119

* Boats with linefishing permits may also hold permits for other fishery sectors, e.g. squid-jigging (Table IX) and purse-seining (Table XIX)

The codes for registration areas are explained in Table III

3.12 Linefish

There was a slight increase in the number of registered commercial linefishing vessels reporting catches to the National Marine Linefish System. In all, 2 605 vessels submitted monthly catch returns, reporting a total of 90 174 days fished, slightly more effort than in 1994 (Table XX). These vessels reported a total national catch of 14 721 t of linefish (excluding squid and tuna) in the Western Cape, former Transkei and KwaZulu-Natal during 1995, which is a 10% increase over 1994 (Tables XXI, XXII and XXIII).

TABLE XXI: Total reported Cape catch (to the nearest 100 kg) of linefish species (tun

Locality	Snoek	Yellow-tail	Kob	Geelbek	Car-penter (silver-fish)
Port Nolloth	725 300	7 800	-	-	-
Doring Bay	27 700	2 500	-	-	-
Lambert's Bay	448 400	100	-	-	-
Elands Bay	741 800	300	-	-	-
Laaiplek	213 700	1 300	-	-	-
St Helena Bay	3 710 800	2 800	100	-	-
Saldanha Bay	227 000	1 200	1 000	100	-
Yzerfontein	1 162 000	16 100	100	-	-
Cape Town	374 800	200	-	-	-
Hout Bay	208 000	100	-	-	-
Kommetjie	357 000	12 100	200	-	700
Kalk Bay	242 500	3 200	31 000	20 300	1 500
Gordon's Bay	69 600	7 500	32 100	57 100	12 100
Hermanus	452 000	-	800	3 600	2 400
Gans Bay	117 600	25 500	24 000	63 600	61 800
Struis Bay	2 700	488 100	38 600	32 400	129 500
Waenhuiskrans (Arniston)	27 900	151 700	15 100	11 300	211 100
Still Bay	5 300	3 500	232 600	4 600	31 200
Mossel Bay	-	-	42 300	500	15 100
Plettenberg Bay	57 700	35 000	10 800	2 000	11 600
Jeffreys Bay	2 300	1 700	15 900	8 200	24 100
Port Elizabeth	300	6 600	75 200	31 900	125 400
Port Alfred	-	1 300	118 600	25 000	83 100
East London	-	100	7 500	28 800	37 200
Total (1995)	9 174 400	768 700	645 900	289 400	746 800
Total (1994)	7 303 500	823 800	626 200	379 100	613 900

* Updated

† Mainly baardman, blue hottentot

TABLE XXII: Total reported catch (to the nearest 100 kg) of linefish speices by registe

Locality	Kobs†	Geelbek	Slinger	Santer	Blueskin	English-man
					1994	
Transkei	1 200	4 900	7 000	1 600	100	2 400
Southern Natal	18 100	62 700	102 700	19 600	14 300	26 600
Northern Natal	56 500	12 200	107 400	33 100	24 100	5 000
Total	75 800	79 800	217 100	54 300	38 500	34 000
					1995	
Transkei	1 600	300	6 300	1 000	-	2 300
Southern Natal	24 200	78 900	82 200	19 600	11 400	21 300
Total	57 600	96 500	162 200	46 300	16 000	26 500

* Updated

† Includes kob and squaretail kob

‡ Includes dageraad, Dane, king s

§ Mainly seacatfish (barbel), Germ

egistered commercial boats in 1994* and 1995

d en- as	Red stump-nose	Dageraad	Seventy-four	Santer	Hottentot	Chub mackerel	Sharks	Panga	White stump-nose	Elf	Hake	Other†	Total
-	-	-	-	-	600	-	200	-	-	-	-	100	734 000
-	-	-	-	-	1 000	-	-	-	-	-	-	-	31 200
-	-	-	-	-	21 600	-	-	-	-	-	-	100	470 200
-	-	-	-	-	3 900	-	-	-	-	-	-	9 600	755 600
-	-	-	-	-	1 400	-	500	-	-	-	-	200	217 100
-	-	-	-	-	37 800	100	1 600	-	300	-	-	0	3 753 500
-	-	-	-	-	30 000	-	3 300	-	80 500	600	-	9 700	353 400
-	-	-	-	-	18 300	-	8 400	-	-	-	-	700	1 205 600
-	-	-	-	-	21 700	1 100	400	200	-	-	-	700	399 100
-	-	-	-	-	6 600	-	200	-	-	-	-	300	215 200
-	-	-	-	-	28 300	2 300	2 900	1 200	200	-	100	700	407 400
-	200	-	-	-	13 500	7 500	15 300	6 800	30 300	6 700	300	9 900	392 200
100	600	-	-	-	13 600	6 500	8 800	1 400	10 100	12 000	-	13 700	255 000
-	100	-	-	-	2 300	1 700	1 200	1 300	100	-	-	600	467 100
400	3 100	-	-	-	46 900	28 700	119 400	500	3 300	400	800	8 500	519 500
400	3 200	-	-	1 400	800	16 800	45 300	-	100	17 200	600	2 200	793 800
900	100	100	-	6 700	-	1 400	17 500	200	-	800	400	1 200	464 500
100	300	600	-	4 400	-	600	46 700	500	300	300	76 700	2 500	418 500
100	300	100	-	1 500	-	2 000	22 900	200	-	200	81 500	1 500	173 000
500	500	200	-	500	-	14 600	1 200	1 600	-	100	457 900	9 800	611 500
400	500	1 900	-	1 100	-	5 100	600	5 300	-	-	25 800	1 000	95 800
500	1 600	4 600	-	11 400	-	4 900	1 600	15 600	100	3 500	85 500	1 700	377 800
500	3 100	5 400	100	5 400	-	500	100	54 900	-	1 100	26 400	4 900	337 000
200	900	4 000	2 200	600	-	600	-	8 300	-	100	300	9 600	112 600
100	14 500	16 900	2 300	33 000	248 300	94 400	298 100	98 000	125 300	43 000	756 300	89 200	13 560 600
100	19 700	23 100		36 400	805 500	102 300	499 300	155 900	110 600	33 400	449 200	112 200	1 231 700

gurnard, jacopever, kingklip, maasbanker, rock-cod, seacatfish (barbel), steentjie and unspecified fish

boats fishing off the Wild Coast and KwaZulu-Natal in 1994* and 1995

	Scots-man	Emperor	Seventy-four	Red steenbras	Unspecific redfishes‡	King mackerel	Queen mackerel	Yellowtail	Poenskop (Black musselcracker)	Rock-cods	Other$	Total
								1994				
	1 900	-	500	900	1 500	-	-	200	1 000	3 700	4 000	30 900
	7 400	7 600	900	200	600	5 800	200	400	3 500	19 400	30 400	320 400
	400	300	800	200	1 100	9 400	9 200	100	1 900	35 100	14 000	310 800
	9 700	7 900	2 200	1 300	3 200	15 200	9 400	700	6 400	58 200	48 400	662 100
								1995				
	1 100	-	100	500	1 800	-	-	1 000	800	4 500	4 500	25 800
	8 000	3 600	1 100	200	500	2 000	200	7 000	2 300	16 900	44 300	328 000
	9 200	3 800	1 300	700	2 800	4 100	300	8 100	3 800	46 200	57 100	542 500

gfish, rubberlip, carpenter (silverfish), blue hottentot, dolphinfish, yellowfin tuna and unspecified fish species

TABLE XXIII: Total reported Western Cape landings (to nearest 100 kg) of linefish species at fishing harbours in 1994 and 1995 (excluding tuna)

Locality	Snoek	Yellowtail	Kob	Geelbek	Carpenter (silverfish)	Roman, Red stumpnose, Santer	Red steenbras, Dageraad, 74	Hottentot	Chub mackerel	Sharks
Port Nolloth	9 700	-	-	-	-	-	-	-	-	-
Doring Bay	44 200	-	-	-	-	-	-	3 900	-	-
Lambert's Bay	275 700	-	-	-	-	-	-	16 000	-	-
Elands Bay	109 400	-	-	-	-	-	-	1 500	-	-
Laaiplek	500	-	-	-	-	-	-	100	-	-
St Helena Bay	1 666 700	-	-	-	-	-	-	-	-	-
Saldanha Bay	438 300	-	3 400	-	-	-	-	5 600	-	100
Yzerfontein	1 544 600	-	-	-	-	-	-	22 400	-	6 000
Hout Bay	432 900	2 500	-	-	-	-	-	6 000	-	-
Kommetjie	66 000	100	-	-	-	-	-	8 500	-	-
Kalk Bay	555 700	1 500	7 500	2 600	600	2 200	-	13 000	1 400	-
Gordon's Bay	17 200	3 500	12 500	21 500	4 500	4 000	-	3 800	1 400	-
Hermanus	-	8 700	-	500	90 000	300	2 700	200	-	400
Gans Bay	2 400	-	-	3 300	100	-	-	-	600	1 800
Waenhuiskrans (Arniston)	-	127 800	37 800	22 800	17 100	16 400	10 900	-	2 500	-
Still Bay	-	500	139 000	5 400	23 500	4 800	100	-	400	-
Total (1995)	5 163 300	144 600	200 200	56 100	135 800	27 700	13 700	81 000	6 300	8 300
Total (1994)	8 104 400	274 400	190 900	55 200	101 000	39 500	10 400	468 400	25 300	78 200

* Includes the same species as the Cape commercial catch summary

Reported catches in KwaZulu-Natal increased slightly from 662 t in 1994 to 677 t in 1995. The catches in the Western Cape continued to increase and a new record high of 14 044 t was reported in 1995.

Snoek *Thyrsites atun* catches continued to define the trends in the linefishery. The higher Western Cape catch resulted entirely from an increase in catches from 7 754 t in 1994 to 9 578 t in 1995.

Catches of all other important linefish species declined, partially as a result of decreased availability and partially because fishers concentrated their efforts on snoek. The most significant decline was hottentot *Pachymetopon grande* which declined from a record high of 815 t in 1994 to a below-average catch of 254 t. This low catch of hottentot was probably due to the concentrated effort on snoek along the West coast.

Catches of yellowtail *Seriola lalandii* decreased by 10% to 789 t, while catches of kob *Argyrosomus inodorus* remained constant. Catches of geelbek *Atractoscion aequidens* continued to decline from 387 t in 1994 to 293 t in 1995. Catches of most redfish species continued to decline, the most significant being red stumpnose *Chrysoblephus gibbiceps*, which declined by 25%, and red roman *Chrysoblephus laticeps* which dropped by 22%.

TABLE XXIV

Commercial catches (t) of tuna species reported per catch method by South African vessels in South African and Namibian waters

Method	Albacore		Yellowfin		Bigeye		Skipjack		Total	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
Pole	3 704	4 127	256	145	50	27	2	2	4 012	4 301
Rod and line	48	8	7	-	-	-	1	-	57	57
S.A. total	3 752	4 135	263	145	50	27	3	2	4 069	4 358
Namibian waters	1 518	-	-	-	27	-	1	-	1 546	-
Grand total	5 270	4 135	263	145	77	27	4	2	5 615	4 358

Panga	White stumpnose	Elf	Hake	Other	Total
-	-	-	-	-	9 700
-	-	-	-	-	48 100
-	-	-	-	400	292 100
-	-	-	-	4 600	115 500
-	-	-	-	-	600
-	-	-	-	-	1 666 700
-	-	-	-	800	448 200
-	-	-	-	14 900	1 587 900
-	-	-	-	100	441 500
-	-	-	-	700	75 300
3 600	8 400	1 400	-	3 500	601 400
3 800	1 300	4 400	-	1 700	79 600
-	-	-	-	-	102 800
-	-	-	-	-	8 200
-	-	2 800	100	1 500	239 700
100	200	100	32 100	500	206 700
7 500	9 900	8 700	32 200	28 700	5 924 000
18 600	24 600	5 700	27 600	13 700	9 437 900

Carpenter *Argyrozona argyrozona* catches increased by 17% as a result of increased fishing effort on the deep Agulhas banks by the large freezer vessels. Reported hake handline catches increased by 95% from 388 t in 1994 to 760 t in 1995.

The reported commercial catch in KwaZulu-Natal and the Wild Coast amounted to 677 t. The most significant declines in catches from 1994 were queen mackerel *Scomberomorus plurilineatus* by 97%, king mackerel *Scomberomorus commerson* by 73%, blueskin *Polysteganus coeruleopunctatus* by 58% and emperor *Lethrinus elongatus* by 52%. Most of the other species also showed a downward trend. The only species yielding increased catches were geelbek and yellowtail.

Reported tuna catches by South African boats in South African and Namibian waters declined from 5 615 t to 4 309 t, a drop of 23% (Table XXIV). As a result of the pole-fishing method used, albacore (longfin tuna) *Thunnus alalunga* continues to be the only important target species for South Africa fishermen and it contributed 96% of the total catch. Limited quantities of yellowfin tuna *Thunnus albacares* (145 t) and bigeye tuna *Thunnus obesus* (27 t) were caught as a by-catch in this pole fishery.

Less than 50% of the total linefish catch in the Western Cape was landed at fisheries harbours. This decrease in reported catches at fisheries harbour is related to the increased hake catch along the east coast where there are no fisheries harbours. As expected, most of the snoek were landed at the St Helena Bay and Yzerfontein harbours. Stil Bay remained the most important harbour for kob and handline-caught hake.

TABLE XXV
Geographical distribution of beach-operated net permits, permit-holders and mullet catches (as at 31 December)

Method	Region	Number of permit-holders*		Registered drift and beach-seine nets*		Number of mullet caught		Percentage of beach-seine catch	
		1994	1995	1994	1995	1994	1995	1994	1995
3-6	Orange River to Lambert's Bay	65 (3)	86	69 (3)	97	109 986	411 723	2,4	8,5
7-12	Elands Bay to Langebaan	304 (6)	304 (6)	755 (6)	755 (6)	2 824 562	2 824 562	61,2	61,2
13-17	Yzerfontein to Kommetjie	25	34	26	35	368 487	270 329	8	5,6
18-23	Simonstown to Kleinmond	12	12	23	23	852 789	783 825	18,5	16,2
24-27	Kleinmond to Cape Agulhas	34 (1)	33	43 (1)	42	318 718	399 166	6,9	8,3
28-32	Cape Agulhas to Still Bay	25	25	28	28	112 571	112 571	2,45	2,3
33-35	Mossel Bay to Port Elizabeth	2 (1)	2 (1)	2 (1)	2 (1)	26 314	26 314	0,6	0,6
Total (numbers)		467 (11)	496(7)	946 (11)	982 (11)	4 613 427	4 828 490	100	100
Total (kg mass) **						1 153 357	12 071 122		

* Shore-owners and the number of free "ration-fish" nets granted to them are shown in parenthesis
** Mass is obtained by dividing number of fish by 4

TABLE XXVI
Species other than mullet caught in drift, beach-seine and shark gillnets

Species	Catch (kg)	
	1994*	1995
St Joseph (Elephantfish)	34 710	102 519
Soupfin shark (Vaalhaai)	2 207	543
Skates and rays	6 335	3 765
Unspecified sharks	3 912	9 131
Chub mackerel	1 178	10 060
Elf	1 984	3 173
Horse mackerel (Maasbanker)	444	5 709
Kob	2 007	1 939
Pilchard (Sardine)	2 226	4 304
White steenbras	6 768	13 643
Yellowtail	13 806	10 622
Other fish†	2 327	4 545
Total	77 904	169 953

* Updated

† Baardman, blacktail (dassie), garrick (leervis), grunter, gurnard, hottentot, musselcracker, sand steenbras, seacatfish (barbel), sole, springer (flathead mullet), steentjie, strepie, white stumpnose, zebra and unspecified bony fish

3.13 Mullet and St Joseph

Since 1994 the number of permit-holders has increased by 4,6% and the number of nets by 2,2% (Table XXV). These include additional permits at Doringbaai, Yzerfontein and Hawston (experimental permits). In addition, a number of experimental drift-net permits have been allocated in the Saldanha Bay area in exchange for trek-net permits, as the area available for trek-netting has been reduced drastically over the years.

The total mullet *Liza richardsoni* catch decreased by 15% compared with 1994. Landings of by-catch species increased by 118% compared with 1993, but they are still way below the 1992 values (Table XXVI). The number of St Joseph sharks *Callorhinchus capensis* landed increased substantially from 1994. The increase in by-catch may be the result of increased availability compared to 1994, when a severe red tide disrupted fishing activities.

Research is underway to evaluate the present method of collecting catch and effort information through compulsory catch returns. Preliminary evaluation of results revealed that the weight of fish landed in beach-operated nets far exceeds that reported.

3.14 Demersal fish

In 1995 the demersal trawl fishery was directed at three main species; hake *Merluccius capensis; M.paradoxus*, Agulhas sole *Austroglossus pectoralis* and horse mackerel with a large by-catch of associated species. The hake-directed fishery remained the largest sector of the South African fishery, with a 151 000 t TAC. From this, the deep-sea sector was issued with 118 834 t (78,7%) and the smaller, inshore hake and sole-directed fishery with 9 834 t (6,5%). Independent and smaller groups made up the balance of the hake quotas issued. The Agulhas sole TAC was 872 t and a precautionary catch limit of 58 000 t was placed on horse mackerel. Midwater effort remained low, with poor horse mackerel availability and reduced targeting. Handlining for hake increased in 1995, with most effort directed in the Plettenberg Bay area. Handline-caught hake is not yet limited for licensed commercial skiboat operations, but as the catch increases, greater control will inevitably have to be exerted so that all hake caught are allocated within the TAC.

A feature of the fishery in 1995 was the disruption of fishing activity by industrial instability, particularly affecting the larger trawling companies. This, to a large extent, accounted for the shortfall in the hake catches and resulted in a large carry-over (11 206 t) into 1996 (effectively caught in 1996 but taken off the 1995 quota allocations). The community trust allocations were also fished mostly by the larger companies.

A total of 5 000 t of hake was put in reserve by the Minister of Environmental Affairs and Tourism for use in the long-line experimental fishery. Of this, 4 000 t was allocated to the longline experiment, of which 2 000 t came from existing trawl quota-holders and 2 000 t from the longline reserve. In total, an estimated 4 338 t of hake was not issued in 1995.

The structure of the industry and the annual catch rates were much the same as in previous years. Companies generally reported good fishing conditions with the normal seasonal variations in availability. As before, effort was directed around the entire coast, but was particularly high off Saldanha Bay and in a broad area extending from Cape Town to Cape Point. Effort on the South and East coasts was directed mostly at the Blues (an area on the eastern Agulhas Bank, due south of Mossel Bay) for hake, and closer inshore for Agulhas sole.

Total catches in 1995 are compared to 1994 in Table XXVII and the catches in each sector are given in Table XXVIII. Catches of hake on the West and South coasts approximated the 2:1 ratio advised by M&CM. Total reported demersal landings in 1995 were lower than those reported for 1994, probably the result of the smaller hake catch, which in turn results in a lower by-catch.

A significant development was the issue of two exploratory deep-water permits (for exploiting deep-water species at depths greater than 700 m). Initially, only one permit was activated but most effort was directed at orange roughy *Hoplostethus atlanticus* in Namibia. Some exploratory effort was also started in South African waters and is expected to increase in 1996. Target species include the lucrative orange roughy, deep-water oreodories and the alfonsinos.

3.14.1 Deep-sea trawl

The 1995 total landings in the offshore fishery were lower than in 1994 (161 582 t compared with 167 103 t). Catch rates (hake-directed) were also slightly lower than in 1994. Effort was mostly hake-directed with 110mm diamond mesh. Industrial instability was cited as the major reason for the main deep-sea companies not attaining their quotas. Fleet capacity was unchanged, with 21 freezer and 71 wetfish vessels (some were also periodically switched from freezer to wetfish vessels). Quotas issued to the deep-sea sector amounted to 118 834 t, with the major share going to five companies. However, smaller companies or groups also contributed to the total deep-sea sector catch. These included the Port Nolloth Community Group, as well as several new quota-holders who started fishing in 1994. Quotas continued to be traded within the deep-sea sector, while small amounts were transferred between the inshore and deep-sea sectors. The deep-sea sector landed 126 704 t of hake in 1995 (calendar year catch only). By-catch remained an important component of the deep-sea catch (Table XXVIII). Kingklip *Genypterus capensis* catches were similar to previous years but, given the low hake catch, could possibly have exceeded 3 000 t. Monkfish *Lophius vomerinus* are a major target, and landings of this species increased by 18% in 1995 to 5 866 t. This figure would undoubtedly have been larger if the full hake TAC had been caught. Snoek catches also increased slightly to 6 871 t, but chub mackerel catches decreased to 1 723 t. Catches of ribbonfish *Lepidopus caudatus*, which are also targeted by the deep-sea trawl fleet from time to time, was similar to the previous year. Horse mackerel is still a major component of the deep-sea by-catch, although compared with 1994 the reported landings were down. Other major species included angelfish *Brama brama* (1 740 t), jacopever *Helicolenus dactylapterus* (1 103 t) and John Dory *Zeus capensis* (1 066 t).

The KwaZulu-Natal trawl catch comprised a relatively small proportion of the total demersal catch, although in a regional perspective it is significant. Trawl-directed effort in the Natal Bight and also farther offshore on that coastline is directed at both shallow-water and deep-water crustaceans. The target species (prawns) constitute a small proportion of the total catch, with a large by-catch of cephalopods and finfish. A large percentage of the latter is probably discarded, this being a feature of tropical prawn-directed fisheries worldwide.

3.14.2 Inshore trawl

The south-east coast inshore trawl fishery operates in an area landwards of the 110 m isobath between Cape Hangklip in the west and Port Alfred in the east. In the interests of fishing effort control, the industry has self-imposed a maximum vessel power limit of 750 bhp (552Kw). Trawler length ranges between 15 and 30 m, with the smaller vessels targeting sole on the shallower grounds and the larger vessels targeting hake farther offshore. Sea trips average six days and catches are iced in ponds or bins until landed. During 1995 a total of 35 trawlers belonging to 11 companies were active in this fishery. They were based at Mossel Bay (29), Port Elizabeth (4) and Hermanus (2).

The inshore trawl fishery is regarded as stable, and annual landings (Table XXVIII) seldom deviate by more than about 5% from the running average.

The total 1995 catch of 15 457 t (whole mass) was slightly down on the annual average of 15 673 t (1986-1994). The three target species in the fishery, hake, horse mackerel and Agulhas sole, comprised 69%, 7% and 5% of the total catch respectively.

Sole and hake catch rates during 1995 were higher than they have been for several years in the inshore fishery. Hake appeared to have moved in closer to the coast, a phenomenon also reflected in the linefish catches. The inshore hake allocation for 1995 was 9 834 t, all of which was caught. Additional amounts were imported from the deep-sea sector and the Jeffrey's Bay Trust respectively, making up a total inshore hake catch of 10 602 t. This is considerably higher than the average annual catch of

TABLE XXVII

Nominal (live) mass of bottom- and midwater-trawled fish, cephalopods and crustaceans landed in South Africa in 1994 and 1995, showing the amounts taken on the West and South coasts

Species	1994		1995			
			West Coast	South Coast	Total	
	tons	%	tons	tons	tons	%
Cape Hakes (Quota year*)	144 045†	76,7	97 531	47 991	145 522	77,70
(Calendar year*)					139 956	
Kingklip	2 878†	1,5	1 383	1 477	2 860	1,56
Soles	979	0,5	1	769	770	0,42
Sandrat sole	-	-	-	43	43	0,02
Kob (Kabeljou)	134	0,1	-	126	126	0,07
Panga	536	0,3	6	641	647	0,35
Other reds	55	-	26	39	65	0,04
Carpenter (Silverfish)	16	-	1	22	23	0,01
Pomfret (Angelfish)	2 127	1,1	1 608	132	1 740	0,95
Gurnards	575	0,3	167	348	515	0,28
Jacopevers	731	0,4	764	345	1 109	0,61
John Dory	1 087	0,6	686	383	1 069	0,58
Horse mackerel (Maasbanker)	12 054	6,4	2 048	7 273	9 321	5,09
Skates	1 130	0,6	6	934	940	0,51
White stumpnose	33	-	-	51	51	0,03
Snoek	6 149	3,3	3 204	3 719	6 923	3,78
Monk	5 057	2,7	4 709	1 232	5 941	3,24
Sharks and St Joseph	387	0,2	30	314	344	0,19
Chub mackerel	2 468	1,3	210	1 708	1 918	1,05
Ribbonfish	4 743	2,5	2 011	2 946	4 957	2,70
Southern rover (Bonnetmouth, Red mullet)	121	0,1	61	41	102	0,06
Red squid	42	-	6	13	19	0,01
White squid	450	0,2	8	331	339	0,18
Octopus	91	-	19	15	34	0,02
Other	505	0,3	151	159	310	0,17
Subtotal	186 394	99,1 99,3	110 905	69 217	180 122	-
Offal (trash fish)	1 079	0,6	1 534	949	2 483	-
Subtotal	187 473	99,9	112 439	70 166	182 605	-
Natal: Crustaceans	248	0,1			400	-
Cephalopods	9	-			43	-
Finfish	18	-			71	-
Total	187 748	100,0			183 119	100,00

* The Quota year figure is the amount declared for quota reconciliation purposes, which includes permitted transfers between years, i.e. quota carry-over from 1994 to 1995

The Calendar year catch is the total landed between 1 January and 31 December 1995 and includes line- and longline-caught hake.

All species other than hake are trawl-caught figures for the calendar year only.

† Calendar year only and excluding longline and line-caught catches.

9 048 t (1986 - 1994), and it may be attributed to increased availability of target species inshore. This also contributed to the sole catch of 769 t being slightly below the allowable catch of 808 t (1995 TAC of 872 t less 64 t over-catch in 1994).

While 6 400 t of horse mackerel was held in reserve for the inshore sector, only 1 012 t was landed. Horse mackerel is a highly mobile, migratory species and the declining catches since 1993 are thought to be the result of poor local availability and less targeting rather than of a decrease in biomass.

A feature of the inshore trawl fishery is the high diversity of by-catch species. Catches of skate (several species totalling 934 t: 6% of the total catch), panga *Pterogymnus laniarius* (562 t: 4%), squid (248 t: 1.6%), gurnard *Chelidonichthys capensis* (229 t: 1.5%), St Joseph (200 t: 1.3%) and kob (126 t: 0.8%) remained the same as in previous years.

The inshore fishery is well established and of considerable socio-economic importance to the region.

3.14.3 Horse mackerel and the midwater trawl fishery

In 1995, a total of eight permits was issued for horse-mackerel-directed, midwater trawling on the South Coast, and 3 228 t was landed using this gear. This is much lower than the catches of up to 40 000 t in the early 1990s. Significant by-catches in this fishery were chub mackerel (188 t), hake (310 t) and ribbonfish (48 t). The midwater fishery is not an exclusive one and vessels with midwater permits also operate using hake-directed bottom-trawl gear, depending on availability.

Horse mackerel is a very mobile species, and its distribution appears to be strongly influenced by environmental cues such as temperature and food availability. As a result, local distribution is highly variable and they are often difficult to locate. In addition, their vertical position in the water column is unpredictable as they may behave either as a demersal or a semi-pelagic species, making them difficult to catch, and from a management point of view, difficult to assess in terms of biomass. They are patchily distributed over most of the Agulhas Bank, although their abundance increases along the edge of the Bank at depths greater than 200 m. The bulk of the midwater catch is taken on the south-east coast off Port Elizabeth. The midwater fleet accounted for 30% of the total South African horse mackerel catch in 1995. The remaining 70% was taken by the demersal fleet, either targeted or as by-catch.

Trawl catches of horse mackerel have averaged approximately 30 000 t per annum since the declaration of the Exclusive Economic Zone in 1977, and peaked at 45 000 t in 1990 with the establishment of a targeted midwater fishery. Catches have since declined steadily to a low of 8 000 t in 1995. The fishing industry reported a marked drop-off in horse mackerel availability during 1994-1995. Horse mackerel is a fairly low value product and the fishery is very sensitive to catch rates. In addition, fuel-subsidized foreign nation fisheries have inhibited South African horse mackerel exports and local consumption is unable to support a large-scale fishery.

3.14.4 West Coast experimental sole and gurnard fisheries

Between 1990 and 1993 two experimental permits to land West Coast sole *Austroglossus microlepis* in Port Nolloth were issued each year. The permit-holders did not reapply in 1994 as imported soles flooded the local market and pushed prices down. A single permit was applied for and granted in 1995, but no effort was expended.

Four permits to target gurnard were issued in 1995 (compared with three in 1994) in an area close to St Helena Bay, but no further than 5 nautical miles from the coast. Trawlers caught a total of 501 t of gurnard in 1995 compared with 575 t in 1994; 32% on the West Coast and the rest on the South Coast. Little effort was expended in the experimental fishery off St Helena Bay and this experiment may have to be terminated.

3.14.5 Hake-directed longline experiment

The first phase of the hake-directed longline experiment was successfully completed in June 1995. In all, 58 vessels participated, including boats from the Tuna Association, the deep-sea sector as well as numerous smaller vessels based at small coastal ports (referred to as the inshore sector). A total of 2 000 t of hake was allocated by the Minister to the different groups (deepsea 1 200 t; tuna 1 200 t; inshore 800 t). A further 2 000 t of "own quota" was used for the experiment by the deep-sea sector. Effort was directed temporally and spatially according to the scientific sampling

TABLE XXVIII
Nominal (live) mass of demersal fish landed (t) by various fishing sectors in South Africa in 1994* and 1995*

Species	Deepsea trawl	Inshore (South Coast) trawl	Midwater trawl	Longline and Handline	Total
Cape Hakes (Quota year*)					145 522
(Calendar year*)	126 704	10 602	310	2 340	139 956
Kingklip	2 789	69	2	112	2 972
Soles	1	769	-	-	770*
Sandrat sole	-	43	-	-	43
Kob (Kabeljou)	-	126	-	-	126
Panga	56	562	-	-	647
Other reds	61	3	-	32	96
Carpenter (Silverfish)	0,5	22	-	-	22,5
Pomfret (Angelfish)	1 740	0,5	0,5	-	1 741
Gurnards	285	229	1	-	515
Jacopever	1 103	6	5	-	1 109,5
John Dory	1 066	2	2	-	1 070
Horse mackerel (Maasbanker)	5 688	1 012	2 621	-	9 321
Skates	6	934	-	-	940
White stumpnose	-	50	-	-	50
Snoek	6 871	48	4	-	6 923
Monk	5 866	69	6	-	5 941
Sharks and St Joseph	33	311	-	-	344
Chub mackerel	1 723	7	188	-	1 918
Ribbonfish	4 901	8	48	-	4 957
Southern rover (Bonnet-mouth, Red mullet)	102	-	-	-	102
Red squid	19	-	-	-	19
White squid	79	248	12	-	339
Octopus	33	1	0,5	-	34,5
Pilchard	-	-	-	-	-
Other	191	116	3	-	310
Subtotal (1995)	159 318	15 238	3 228	2 484	180 267
Percentage (1995)	86,9	8,3	1,8	0,13	98,4
Offal (trash fish)	2 264	219	-	-	2 483
Total (1995)	161 582	15 457	2 338	2 484	182 750
Subtotal (1994)	167 103	15 104	4 187	2 901	189 295
Percentage (1994)	88,3	8,0	2,2	1,5	100,0
Offal (trash fish)					1 079
Total (1994)					190 374

* The figures for hake and sole are for the calendar year 1995

required. The objective in the pilot phase was to obtain data with which to assess and compare the selectivity of the longline fishing method with that of trawling. The results obtained showed clearly the differences in the size distribution of the catches made by the two fishing methods. It also showed that the selectivity patterns differed between the two species of hake and from area to area. Longlines catch predominantly larger fish and, as a result of the known size disparity between sexes (hake), longline catches are dominated by females.

The subsequent modelling based on these data suggested that longlining, as a fishing technique for hake, was apparently biologically preferable to trawling. The longline experiment moved into the next phase, a two-year experimental fishery in January 1996. For this purpose, 4 300 t of hake was allocated (annual figure) and was distributed in a similar way to that in the pilot study, the only exception being a 300 t increase allocated specifically to the Eastern Cape.

3.14.6 Demersal species and stocks

Offshore stocks

Exploitation of the Cape hakes is directed at two species. The deep-sea sector continues to target hake in waters deeper than 300 m and research has shown that at these depths the proportion of the shallow-water hake *Merluccius capensis* in the trawl catches rarely exceeds 10%. Resource assessment is based on the 110 mm mesh hake directed effort of the deep-sea fleet (therefore effectively assessing the deep-water *M. paradoxus*). Commercial catch rates, combined with research biomass estimates, show no major changes in the hake stock size or in availability. New research does indicate, however, that the rate of recovery of the hake stocks since the early 1980's has not been as good as was at first believed. As the resource assessment focuses primarily on the deep-water stocks which dominate West Coast landings to an extent of 90%, there is also increasing concern for the shallow-water stocks, because the developing longline fishery as well as the rapidly growing hake-directed linefishery on the South and East coasts target the latter and the catch of shallow-water hake is expected to increase.

There is also growing interest in hake stocks off the West Coast close to the South African/Namibian border. Catches of shallow-water hake fluctuate widely in this area and this is thought to be associated with migration between the two countries. It is hoped that future co-operative research with Namibia will shed more light on this and perhaps allow an overall estimation of biomass for all West Coast hake stocks to be made.

Monkfish catches increased from 5 028 t in 1994 to 5 866 t in 1995, with about four times more caught on the West Coast than on the South Coast. Targeting for monkfish increased in 1995 compared with previous years. To produce an index of targeting, monkfish catches were divided by hake catches. The ratio increased from 3,5% in 1994 to 4,6% in 1995, but for some companies the ratio was substantially higher (22-51%), indicating determined targeting by those companies. It is noteworthy that an established monkfish-directed fishery operates in Namibia and that applications for permits to target monkfish in South Africa have been made, with particular interest in the shelf area north of Cape Columbine.

The offshore fishery continues to be closely monitored, with regular land-based sampling of the commercial landings. Sampling is concentrated in Cape Town and Saldanha Bay. Monthly sea-based samples are also taken by trained observers. This regular sampling has also been augmented by a cooperative research programme between in-house researchers and the South African Network for Coastal and Oceanographic Research (SANCOR) aimed at assessing the by-catch and discard components of the trawl and other fisheries.

Inshore stocks

Monitoring of the inshore trawl landings continued to be of a high standard during 1995. This task is facilitated by the fact that the bulk of the fleet operates out of Mossel Bay, where a field station and personnel are permanently located. In addition, close liaison and excellent co-operation exists between M&CM and the industry through the medium of the South East Coast Inshore Fishing Association (SECIFA).

The research initiative on the size and species composition of catch discards also commenced in the inshore sector in 1995. The aim of this project is to quantify the impact of the trawl fishery on pre-recruits of target and by-catch species. Size composition and biological aspects of landed catches continued to be regularly sampled on the wharf.

Another new development in the fishery is a move towards breaking into the wetfish hake export market by producing

a better quality trawled product and by upgrading quayside facilities in Mossel Bay to European Union specifications. Approximately 300-400 t of head-on hake was exported to Europe in 1995.

Five new 354 t hake quotas (previously Community Trust quotas), allocated in October 1995, will be activated in the region in 1996. It is not yet known whether they will be fished by new entrants or be sold as paper quotas to existing companies fishing in the deep-sea sector. Without accompanying sole quotas to accommodate by-catches in the inshore sector, the latter option seems to be the most probable outcome.

The sole catch rate in 1995 (20,8 $kg.h^{-1}$) was the highest since 1989/90. Catches and catch rates on the inner central Agulhas Bank were higher than in most years during the period, February-April 1995, and good catch rates prevailed in June/July as in previous years. In the Port Elizabeth area, catches peaked in July/August 1995, a trend similar to 1994. The percentage of immature sole in the catch in 1995 was 21%, lower than the 31% of 1994.

3.15 Seals

The moratorium on harvesting seals remains in place. A scientific report on seal-fishery biological interactions, together with recommendations by local researchers, have not yet been considered by the Cabinet. As the market for seal products worldwide is currently very weak and, therefore, the prospects for creating job opportunities in South Africa by re-opening this industry are very limited, there is little pressure on Cabinet to re-consider the sealing issue. Moreover, it is a controversial matter which, were the Cabinet to reverse the *status quo*, would likely bring opprobrium on the country. Thus, it is an issue which may remain on the "back burner".

During 1995, nine live seals were exported (down from 15 in 1994) to the following overseas destinations: five to the United Kingdom, three to Czechoslovakia and one to Germany.

3.16 Guano

In 1995, no seabird guano was collected at or shipped from South African or Namibian islands.

The only seabird guano collected in southern Africa was at the seabird platforms in Namibia, where the following amounts were harvested:

Cape Cross, northern platforms	166 t
Cape Cross, central platforms	0 t
Swakopmund platform	507 t
Bird Rock platform	431 t

Therefore, the overall amount of guano collected in Namibia and in southern Africa in 1995 was 1 104 t, less than half the production for 1994.